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REPORT

(of
DEPARTMENT OF AGRICULTURE

to

INTERDEPARTMENTAL COMMITTEE ON COOPERATION

WITH LATIN AMERICAN REPUBLICS



August 3, 1938

Latin America is primarily agricultural, and it would appear rather obvious that the relatively undeveloped countries there would look to us for assistance in solving their agricultural problems, since the United States Department of Agriculture is widely recognized as the largest research organization of its kind in the world. Many requests for assistance have been received from the Latin American governments in the past. In view of the fact, however, that until the passage of Public No. 545, Seventy-fifth Congress, it has been legally impossible for Department employees to receive remuneration from foreign governments, and because of the fact that sufficient funds for loaning such specialists to foreign countries have not been available, the assistance rendered in the past has been definitely limited. As a result of the above difficulties, most of the work that has been done in Latin America has been for the benefit of this Department, although the results of our research, of course, have been made available to Latin American countries.

All are aware of the Secretary's keen interest in the various proposals for improving our relations with Latin American countries. A Departmental committee was appointed early this year to give special consideration to what the Department of Agriculture could contribute to such a program. This committee submitted a report to the Secretary in March, 1938. In general, it is felt that we could be most helpful by encouraging the production in Latin America of non-competitive, strategic products that we must import in order to build up a basis for a larger trade with the Latin American countries. In the following no attempt will be made to repeat what was contained in the comprehensive report of March, 1938. The following is primarily an account of what actually has been done. It will serve as an indication of the future direction that Department activities might take.

FIELD ACTIVITIES: The Foreign Agricultural Service of the Bureau of Agricultural Economics has maintained an office in Latin America, at Buenos Aires since 1930. This office is concerned chiefly with reporting on developments relating to the production of major competitive agricultural products, such as wheat, corn, flaxseed, beef and wool, in Argentina and Uruguay.

In addition, a certain amount of work has been done in other Latin American countries by the Agricultural Attache at Buenos Aires. Reports have been submitted on the Sao Paulo cotton industry, and the lard industry of southern Brazil. While en route to the United States from Argentina, via the West Coast of South America, in 1935, the Acting Agricultural Attache at Buenos Aires collected a certain amount of general data relating to agriculture in Chile and Peru.

Commodity specialists have occasionally been sent to Latin America to investigate developments with respect to specific commodities. A survey of Brazilian cotton production was made in 1934, and of Mexican cotton production in 1935.

Prior to the establishment of the Buenos Aires office, a survey of the agricultural resources of certain of the Latin American countries (Argentina, Uruguay, Paraguay, Chile and Peru) was undertaken in the early

1920's by a representative of the Bureau of Agricultural Economics, and a bulletin published on Agriculture in Argentina and Paraguay.

ACTIVITIES IN WASHINGTON-- In as far as time and personnel have permitted, efforts have been made in the Foreign Agricultural Service Division to keep abreast of the major agricultural and economic developments in Latin America. In addition to supplying information concerning the agricultural resources and developments in Latin America to interested inquirers, both within and outside the Government service, a number of studies relating to important aspects of Latin American agriculture have been published. Among the subjects on which detailed statements have been issued recently are (1) Argentine Corn; (2) A Review and Appraisal of Agricultural Policies in Argentina and Brazil; (3) The Cuban Winter-Vegetable Industry; (4) Cotton vs. Coffee in Brazil; (5) The Brazilian Coffee-Defense Experiment, and (6) Agriculture in Peru. A study is to be published shortly on the subject of the Argentine wheat industry, and work is being carried forward on a bulletin on agriculture in Argentina. Some of these studies have assisted materially in the negotiation of trade agreements with Latin American countries.

ASSISTANCE TO LATIN AMERICAN GOVERNMENTS - The activities described above relate primarily to work performed for the direct benefit of the Bureau of Agricultural Economics.

The type of economic work in which the Bureau of Agricultural Economics is engaged has not been developed to any great extent in most of the Latin American countries so that the demand for assistance in this line of work has been rather limited. There are, however, a few outstanding examples of past assistance on the part of the Bureau which indicate the direction which future aid might take.

In 1923 and 1924 Mr. Leon M. Estebrook was borrowed by the Argentine Government for a period of 18 months for the purpose of re-organizing the statistical and crop reporting service of the Bureau of Rural Economy and Statistics of that country.

In 1928 Mr. Guy S. Meloy of the Cotton Division of the Bureau was borrowed by the Peruvian Government for the purpose of determining the extent to which cotton fibers were injured through the use of American made cotton gins.

For the past two years Mr. J. H. Shollenberger, a grain specialist of the Bureau, has been employed by the Argentine Department of Agriculture to assist in developing a system of grades and standards for grains in the Argentine.

It should be noted that the above specialists were all paid by the respective governments utilizing their services. Prior to the passage of Public No. 545, 75th Congress, employees of this Department could

not receive remuneration from foreign governments.

In the winter of 1936-37 the Bureau detailed a man to Havana, Cuba, for a period of approximately 5 months for the purpose of studying the methods used for the inspection of vegetables for export to the United States and to advise the Cuban Government in respect to certain problems encountered in their winter vegetable industry.

GREATEST INTEREST IN PLANTS

The Bureau of Plant Industry has visited the Latin American countries for many years in the person of crop specialists and botanists who have collected such specific wild plants as potatoes, tomatoes, peanuts, corn, tobacco, coffee, avocados, beans, forage grasses, alfalfas, citrus, kapok, blackberries and strawberries, pineapples, insecticidal plants, as well as many miscellaneous economic and ornamental plants. In return materials have been sent from the various crop divisions of the Bureau to the agencies requesting them. These have been most often technical or agricultural schools, as well as individual workers who have assisted our own travelers. The usual requests are for modern, highly bred staple crops, corn, wheat, cotton, potatoes and apples being most often requested. Other inquiries have come through the Pan American Union, which works closely with the Bureau. Exchange of taxonomic materials is in much less degree but at the present time is of great advantage to the Bureau in that we obtain valuable material by rendering identification services.

Rubber Investigations - Rubber selection and breeding investigations are being conducted on the properties of a private concern in Costa Rica. Orchards of bearing rubber trees were carefully inspected to find trees showing resistance to the South American leaf disease, if possible. Some of the more resistant trees have been tested for rubber production and crosses between the selected trees have been made. Seed has been produced, and several hundred small seedlings are growing. Although it is too soon to know definitely whether certain resistance has been transmitted, the indications are that this is true. Rootstocks of high-yielding strains from Sumatra have been made available to us by a private concern for our investigational work. This concern is working in close relation with the Costa Rican Government.

Cinchona - Cooperative work with private concerns in Guatemala to attempt a local production.

Assistance in Purchase - The Division of Plant Exploration and Introduction is frequently requested to assemble information as to what might be planted at specific places and to assist in the purchase of the material here and its shipping to the purchaser. Costs are borne by purchaser but the Division of Plant Exploration and Introduction does work for sake of cooperation.

The Division of Sugar Plant Investigations has carried out informal cooperative projects with Government and private research agencies in the American Republics during the past 20 years. For the most part, they have consisted of exchange of improved sugarcane varieties. In 1919, ten tons of planting material of the variety Kavangire were obtained from the Estacion Experimental Agricola, Tucuman, Argentina, and transshipped to Puerto Rico and the southern United States for the purpose of controlling an epidemic of mosaic, a virus disease of sugarcane. This variety proved valuable for the purpose for several years until it was superseded by other varieties also resistant to mosaic, and of better milling quality. Sugarcane varieties mostly of kinds improved in disease resistance have been supplied to Government and other research institutions in Guatemala, San Salvador, Costa Rica, Panama, Colombia, Venezuela, Peru, Bolivia, British Guiana, Brazil, Argentina, Cuba, and Haiti. A quarantine station for incoming and outgoing sugarcane is maintained at Washington.

At present the Division is engaged in a cooperation with Experiment Stations near Cali, Colombia, and La Molina, Peru, in an attempt to cross Temperate Zone sugarcanes with tropical canes, which bloom in mid-summer and midwinter, respectively, north of the equator. Taking advantage of the reversed season south of the equator, material is shipped from Washington to Colombia and to Peru, and vice versa. Flowering of the summer-blooming forms in the north coincides in time with flowering of the winter-blooming forms in the south, and thus provides an opportunity for making the cross, the purpose of which is to introduce cold-resistant qualities of the northern form. The experiments were started in 1937 and are being continued in 1938.

The Division of Cereal Crops and Diseases is maintaining an informal cooperative arrangement with the Division of Historical Research of the Carnegie Institution of Washington which involves also cooperation with Mexico and Central America.

Under this arrangement the Bureau of Plant Industry details personnel, the Carnegie furnishes funds, and the governments concerned supply facilities.

The general objects of this project are (1) the distribution of maize relatives with particular reference to the origin of maize and (2) a study of the maize agriculture of the Indians for the purpose of reaching an estimate of the size of the Indian population in the Maya area in pre-Columbian times.

To date three expeditions have been conducted under this cooperative project, - one to Yucatan made by Prof. R. A. Emerson of Cornell and J. H. Kempton of this Bureau; one to Guatemala and Mexico made by Dr. Wilson Popenoe of the United Fruit Co. and J. H. Kempton of this Bureau; and one to the States of Durango and Chihuahua, Mexico, made by James P. Craig of New Mexico and Messrs. G. N. Collins and J. H. Kempton of this Bureau.

In addition to these expeditions the Division of Cereal Crops and Diseases has been supervising Mr. Raymond Stadelman, a staff member of the Carnegie Institution, in the collection of data on the agriculture of the Indians of the Guatemala highlands. Mr. Stadelman has been in residence in Guatemala on this project for eighteen months and his report is in process of preparation.

Mycology and Plant Disease Survey - Some time prior to 1935, probably about 1931, an informal cooperation sprang up between officials in the Biological Institute in Sao Paulo, Brazil, and Doctor Jenkins, of this Division, because of a mutual interest in certain species of Sphaceloma and Elsinoë. Among the diseases caused by these fungi are scab of both sour and sweet orange. The sour orange scab is known in the United States, but that of the sweet orange which occurs in Brazil is not found in the United States. In 1935, at the request of the Brazilian Government, a somewhat more formal cooperation was entered into which took Doctor Jenkins to Sao Paulo, Brazil, to collaborate with Dr. A. A. Bitancourt, of the Instituto Biologico, Caixa Postal 2821. The Brazilian Government paid the travel and subsistence expenses of Doctor Jenkins for approximately eight months, while her salary was borne by the Bureau of Plant Industry. As a result of these studies many obscure points in the life history of Sphaceloma and Elsinoë have been cleared up, and a large number of new species have been added to those previously known.

Since Miss Jenkins' return to the United States the cooperation with Doctor Bitancourt has been continued in an informal manner by correspondence, and is still in progress.

SOME ENTOMOLOGICAL WORK IN LATIN AMERICA.

Many of the insect pests which attack agricultural crops on the mainland of the United States are the same species as occur in parts of Latin America. Some of the important pests such as the cotton boll weevil which are now well established in the United States are native to Latin America. Other insect pests which occur in Latin America, such as various species of fruitflies, are potential hazards to the agricultural interests of the mainland of the United States. These conditions have influenced the entomological activities which have been carried on by the Department.

FROM TIME TO TIME, EXPLORATORY WORK has been carried on in the various Latin American countries to locate natural enemies of insect pests which could be introduced and colonized on the mainland of the United States as aids for the control of important pests. Exploratory work has been carried on to locate natural enemies of the Mexican bean beetle, the sugarcane moth borer, and the cotton boll weevil. In no instance have these possibilities been exhausted. At the present time, through cooperative relations with Cuba and Puerto Rico, and through them with other Latin American countries, studies are being carried on with the idea of colonizing natural enemies of the sugarcane moth borer in Florida and Louisiana.

Activities which have a relation to natural enemies of insect pests have not been one-sided as in addition to carrying on exploratory work of the type referred to above, the Bureau of Entomology and Plant Quarantine has assembled and forwarded to various Latin American countries natural enemies that might aid them in combating pests. For example, parasites of the Oriental fruit moth and parasites of the woolly apple aphid have been forwarded to various countries. The continuing cooperative relations in connection with the importation into Puerto Rico of natural enemies which have been particularly active in the last few years have resulted in the liberation of natural enemies that prey on more than 60 kinds of pests. Some of these parasites have been established and appear to be useful.

VARIOUS KINDS OF FRUITFLIES which occur in Latin America are pests of potential importance to our fruit cultures. In order that we may be in a better condition to combat these pests should they become established in the United States and to ascertain facts that may aid in formulating quarantine regulations regarding the movement of fruits in the United States, laboratories for the study of fruitflies have for a number of years been maintained in the Republic of Mexico, Canal Zone and Puerto Rico. The studies in Mexico are directed principally toward the Mexican fruitfly, a pest which has gained a limited foothold in the fruit cultures of the Lower Rio Grande Valley. Those in the Canal Zone have dealt with a wide variety of fruitflies and they have developed much information regarding their habits and hosts. The studies in Puerto Rico are directed principally to those flies commonly referred to as the West Indian fruitfly and special emphasis has been placed on these in recent years. The information being assembled as the result of these investigations, while primarily for the purpose of protecting the agricultural interests of the mainland, is developing facts that may later permit modification of quarantine regulations so there can be a freer interchange of products that may be attacked by fruitflies and still remove the risk of establishing these pests in our fruit cultures. The continual development of more rapid means of transportation and the changes in commerce introduce new problems and investigations of this type will probably be continued for a considerable period.

WHEN THE PINK BOLLWORM of cotton was first found in parts of the mainland of the United States, there was urgent need for studies to determine facts regarding this insect. The initial studies were conducted in Mexico in cooperation with the Mexican officials. Since then, cooperative relations regarding the pink bollworm and problems incident to the movement of cotton or cotton products have continued. In the research phases we have turned over to Mexican officials large numbers of certain natural enemies of the pink bollworm for colonization in their infested area. In the control work there has been close cooperation in the surveys necessary to determine the abundance and possible presence of the pink bollworm in various parts of Mexico.

TERMITES as a group are destructive to wood and wood products. Many kinds occur in the tropics of Latin America. Those forms commonly known as dry wood termites occur in only a few sections of the mainland of the United States. Their presence in the tropics has a direct bearing on the use of wood or wood products manufactured in or sent to areas where they occur. The subterranean form which requires soil moisture also occurs in the tropics and is similar to the subterranean termites widely distributed throughout the United States. The prevalence of many kinds of termites in the tropics and the fact that they are active throughout the year suggested the advantage of conducting tests there to determine the possible value of various types of treatments that might be applied to wood to prevent termite infestations. For many years the Bureau in cooperation with other agencies has carried on such tests on Barro Colorado Island in the Canal Zone. The information assembled as the result of these tests is made generally available and is widely used in the mainland and in the tropics of Latin America.

IN THE ENFORCEMENT OF PLANT QUARANTINES in parts of Latin America under the jurisdiction of the United States, the products which may be moved under quarantine regulations are inspected and certified by responsible officials of the Bureau. A limited amount of such type of work is carried on in the Canal Zone where the single worker, Mr. James Zetck, makes the necessary inspections and certifications. In Puerto Rico, inspections and certifications are made by a corps of inspectors assigned there for that purpose. Many kinds of plant products of Puerto Rico are inspected not only in the field and packing house, but at the dock prior to being certified for shipment and entry into the mainland of the United States. This not only gives better protection from the possible introduction of pests but eliminates inspection which otherwise would have to be made at the port of entry on the mainland.

Representatives of the Department have made visits to various Latin American countries, after arrangements have been made through appropriate channels, to obtain information regarding the status and distribution of certain pests. Many of these surveys had a relation to restrictions regarding the entry of plant products, and, when the information justified, restrictions were modified so products could enter subject to reinspection at the port of arrival. The importation of grapes from parts of South America was authorized after such surveys had failed to disclose the presence of certain fruitflies in these areas. Some aid has been given Latin American Republics in solving problems of insects and diseases. Recently, for example, help was given to Haiti in determining the probable damage to their banana industry by a new disease.

Research in Puerto Rico and Canal Zone

Puerto Rico is a part of the United States possessing conditions similar in many respects to those prevailing in many parts of Latin American countries. It is our feeling, therefore, that the Federally-supported research conducted on the Island provides contributions to the agriculture of

other Latin American countries. The Department maintains the Puerto Rico Agricultural Experiment Station at Mayaguez, Puerto Rico. It administers the Federal Hatch, Adams, Purnell, and Bankhead-Jones funds at the Agricultural Experiment Station of the University of Puerto Rico, at Rio Piedras, Puerto Rico. The Department also promotes the coordination of all agricultural research on the Island, whether supported by Insular or Federal funds.

THE FEDERAL STATION AT MAYAGUEZ represents the Continental interest in tropical agriculture and the national interests in regional and national agricultural problems with which Puerto Rican agriculture is concerned. The effective work that the Department is conducting at Mayaguez in assembling and testing out plant materials and finding control for plant diseases and insect pests is perhaps helping solve certain problems in the Latin American countries as well as in the continental United States. Another service available to Latin American countries is our exchange of materials with other countries and the maintenance of perhaps the most extensive collection of tropical plants to be found in the western world. These plants and the research connected with their culture are available for study by representatives of Latin American countries.

Many special Acts apply.- In partial recognition of the Continental responsibility to Puerto Rican agriculture and rural life, the Congress extended the provisions of the Hatch, Adams, and Purnell Acts to the Agricultural Experiment Station of the University of Puerto Rico in 1931 and by special mention in the Act, this Station was included to share in the appropriations authorized by the Bankhead-Jones Act passed by Congress in 1935. The Office of Experiment Stations administers the research and expenditures under these Acts. While the Federal Station represents the Continental interest and responsibility in tropical agriculture, the Station of the University of Puerto Rico endeavors to solve the local problems of the Island. The program of research of this Station includes studies of the different types of farms in Puerto Rico; the utilization of the byproducts of sugar manufacture and of fruits such as the mango and papaya; basic soil problems of the Island; plant diseases and insect pests and their control; the breeding of superior strains of field corn, beans, and other crops; the nutritive value of the food crops of Puerto Rico, and other problems.

COOPERATION.- The work of the Station at Rio Piedras, coordinated with that of the Federal Station at Mayaguez and, in fact, all other agricultural research work on the Island, affords a good example of cooperation between local and Federal governments in the solution of agricultural problems.

CANAL ZONE.- In general it is felt that to be of greatest service to tropical Latin America, agricultural research, if undertaken in any comprehensive way, should be located chiefly in the vicinity of the Canal Zone.

Inter-American Highway

Cooperative work with the Central American Republics and Panama on the inter-American Highway has been carried on by the United States Government during the past year under two appropriations. The expenditure of \$75,000 was authorized from administrative funds of the Bureau of Public Roads, and an appropriation of \$1,000,000 was made to cooperate in surveys and construction.

Share in work - The work has been conducted under diplomatic arrangements with each country whereby the United States agreed to furnish all necessary engineering, including supervision of all work to completion; products of American heavy industry such as steel, cement and equipment necessary in the work; and the transportation of such articles to the construction sites. The other countries have agreed to furnish all local materials and perform all necessary operations to make them suitable for use in the several projects; to transport all such local materials; to furnish and pay all labor incident to construction; to build all substructures of bridges and approaches wherever necessary; to construct the necessary sections of road to make all bridges serviceable on or immediately following construction; and to provide all rights of way and easements incident to construction or the securing of materials.

THERE HAVE BEEN COOPERATIVE PROJECTS in Panama and four of the Central American Republics, namely, Costa Rica, Nicaragua, Honduras and Guatemala. In each case the projects were selected after conference with the highway authorities of each interested country, and care was taken to assure not only that the selection made represented the preference of each Government, but that it should be so conditioned and located that it would become immediately serviceable. As much of the work consisted of bridge construction, the latter requirement was exceedingly important in order to avoid the construction of bridges where no adequate roads existed.

SURVEYS were requested by Panama, Costa Rica, Nicaragua and Guatemala, the last three countries requesting both reconnaissance and location surveys. Reconnaissance surveys aggregated 162 miles and location surveys, 123 miles. Costa Rica, Nicaragua and Guatemala requested cooperation in road construction aggregating 55.5 miles, for which work the United States Government furnished road equipment and small quantities of culvert material. All cooperating countries except Costa Rica requested substantial bridge work, which constituted in the aggregate and in each country the larger part of the cooperation. A total of 15 bridges has been constructed, of which ten are 96 feet or over in length and five are less than 96 feet. Three of these structures were large suspension bridges, having total lengths respectively of 486 feet in Guatemala, 787 feet in Panama, and 1,088 feet in Honduras. The bridge program comprised four bridges in Panama, three in Nicaragua, one in Honduras, and seven in Guatemala. All the smaller structures were in Guatemala.

Bridges - In addition to bridge construction, bridge surveys were made and designs furnished for nine other structures, for which standard plans were suggested.

Force Account and Contract.- Work on the inter-American Highway has been carried on both by force account and by contract. The last contract was completed June 17, 1938, but force account work on bridges and roads under available appropriation will continue probably through October of this year.

Field Office.- In connection with the work, a field office has been maintained in San Jose, Costa Rica, and all bridge designing has been done in the field. By an arrangement with the Panama Canal, necessary testing of materials was made in the Canal Zone. At the end of the last fiscal year, commitments had been made absorbing all available construction funds, and at present the work consists of completing the force account projects, principally road construction now under way.

American products.- When the appropriation for construction was made, it was understood that so far as practicable the entire amount would be used for the purchase of American products, and according to the last available statement 90 percent has been expended for American materials, services and personnel, and slightly more than 70 percent has been expended for materials alone. Engineering and overhead have been kept down to slightly over 12 percent, and in the final statement will probably not greatly exceed this, although the work has been carried on under unusual difficulties, involving considerable travel and frequently the use of primitive transportation. Expenditures by the several countries in accordance with the agreements by which each furnished the necessary local materials and paid all labor have amounted approximately to \$710,000, and the amount contributed by the United States, \$680,000.

AT THE LAST SESSION OF CONGRESS, additional funds amounting in all to \$84,000 were made available, to enable the Bureau of Public Roads to continue giving engineering advice and assistance, but no additional funds were provided for construction. At the present time, applications from three countries for additional road surveys or construction, aggregating approximately 138 miles, are on hand, and two countries have indicated their desire to file other requests. It is contemplated that the present funds and work in sight will keep the field force, which has been considerably reduced, occupied during the current fiscal year.



